

CLAIMS

What is claimed is:

1. A system for writing a video frame row by row in a liquid crystal display (LCD) having a matrix of liquid crystal pixels arranged in a plurality of columns and a plurality of rows, said system comprising:

a plurality of column switches adapted for coupling the plurality of columns of said LCD to an output voltage;

a plurality of row switches adapted for selectively coupling the plurality of columns to the pixels of said LCD; and

10 logic circuitry coupled to the plurality of column switches and the plurality of row switches, said logic circuitry adapted to send a control signal to the plurality of column switches to couple said columns to a fixed voltage prior to the writing of each row, thereby charging said columns prior to the writing of each row.

15 2. A system for writing a video frame in a liquid crystal display (LCD) according to claim 1, wherein the logic circuitry includes a column control logic circuit coupled to the plurality of column switches and a row control logic circuit coupled to the plurality of row switches.

20 3. A system for writing a video frame in a liquid crystal display (LCD) according to claim 1, wherein the logic circuitry is coupled to at least one digital-to-

analog converter (DAC), which outputs the output voltage, and said logic circuitry commands said at least one DAC to output a desired video voltage.

4. A system for writing a video frame in a liquid crystal display (LCD) according to claim 3, wherein the logic circuitry commands said at least one DAC to output the fixed voltage.

5. A system for writing a video frame row by row in a liquid crystal display (LCD) having a matrix of liquid crystal pixels arranged in a plurality of columns and a plurality of rows, said system comprising:

10 a plurality of column switches adapted for coupling the plurality of columns of said LCD to an output voltage;

a plurality of secondary column switches adapted for coupling at least one of the plurality of columns to a fixed voltage;

15 a plurality of row switches adapted for selectively coupling the plurality of columns to the pixels of said LCD; and

logic circuitry coupled to the plurality of primary and secondary column switches and the plurality of row switches, said logic circuitry adapted to send a control signal to the at least one secondary column switch to couple at least one of the plurality of columns to the fixed voltage thereby charging said at least one column prior to the writing of each row.

6. A system for writing a video frame row by row in a liquid crystal display (LCD) having a matrix of liquid crystal pixels arranged in a plurality of columns and a plurality of rows, said system comprising:

a plurality of column switches adapted for coupling the plurality of columns of said LCD to an output voltage;

5 a plurality of row switches adapted for selectively coupling the plurality of columns to the pixels of said LCD; and

10 logic circuitry coupled to the plurality of column switches and the plurality of row switches, said logic circuitry adapted to send a control signal to the plurality of column switches to couple said columns to each other to thereby equalize one or more voltages stored on said columns prior to the writing of each row.

15 7. A system for writing a video frame in a liquid crystal display (LCD) according to claim 6, wherein the logic circuitry includes a column control logic circuit coupled to the plurality of column switches and a row control logic circuit coupled to the plurality of row switches.

20 8. A system for writing a video frame in a liquid crystal display (LCD) having a matrix of liquid crystal pixels arranged in a plurality of columns and a plurality of rows, said system comprising:

a plurality of primary column switches adapted for coupling the plurality of columns of said LCD to an output voltage;

a plurality of secondary column switches adapted for coupling at least one of the plurality of columns of said LCD to a fixed voltage;

a plurality of row switches adapted for selectively coupling the plurality of columns to the pixels of said LCD; and

5 logic circuitry coupled to the plurality of primary and secondary column switches and the plurality of row switches, said logic circuitry adapted to send a control signal to one primary column switch to couple its associated column to a desired video voltage and another control signal to a secondary column switch in a successive column so as to couple the successive column to the fixed voltage to thereby charge said successive column while the preceding column is being charged to the desired video voltage.

10. A system for writing a video frame in a liquid crystal display (LCD) according to claim 8, wherein the logic circuitry includes a column control logic circuit coupled to the plurality of primary and secondary column switches and a row control logic circuit coupled to the plurality of row switches.

15. A system for writing a video frame in a liquid crystal display (LCD) according to claim 8, wherein the logic circuitry is adapted to send a control signal to the secondary column switches in the successive two or more columns to couple said two or more successive columns to the fixed voltage while the preceding column is being charged to the desired video voltage.

11. A system for writing a video frame in a liquid crystal display (LCD) according to claim 8, wherein the logic circuitry is adapted to send a control signal to the primary column switch to couple the successive column to a desired video voltage and send a control signal to a secondary column switch corresponding to the next successive 5 column to couple said next successive column to the fixed voltage, so that as the successive column is being charged to its desired video voltage the next successive column is being charged to the fixed voltage.

12. A system for writing a video frame in a liquid crystal display (LCD) 10 according to claim 8, wherein the logic circuitry is adapted to send control signals to the primary and secondary column switches and the row switches so that the sequence of charging one column capacitor to a desired video voltage while the successive column capacitor is being charged to a fixed voltage is repeated until all of the pixels in a given row have been written, and said sequence is again repeated for each successive row until 15 all of the rows in the matrix have been written.

13. A system for writing a video frame in a liquid crystal display (LCD) according to claim 8, wherein the logic circuitry is coupled to at least one digital-to-analog converter (DAC), which outputs the output voltage, and said logic circuitry 20 commands said at least one DAC to output the desired video voltage.

14. A system for writing a video frame in a liquid crystal display (LCD) according to claim 8, wherein the logic circuitry is coupled to at least one digital-to-

analog converter (DAC), which outputs the output voltage, and said logic circuitry commands said at least one DAC to output the fixed voltage.

15. A system for writing a video frame in a liquid crystal display (LCD)
5 according to claim 8, wherein the fixed voltage is generated by a voltage supply
independent from the voltage supply that generates the desired video voltage.

16. A method for writing a video frame row by row in a liquid crystal display
(LCD) having a matrix of liquid crystal pixels arranged in a plurality of columns and a
10 plurality of rows, wherein each column has an associated capacitor and each pixel has an
associated capacitor, said method comprising the step of charging the column capacitors
to a fixed voltage prior to writing each row.

17. A method for writing a video frame in a liquid crystal display (LCD)
15 according to claim 16, wherein the column capacitors are charged to a fixed voltage by
coupling them to an analog voltage driven to a selected preferred voltage under the
command of a logic circuit.

18. A method for writing a video frame in a liquid crystal display (LCD)
20 according to claim 16, wherein the column capacitors are charged to a fixed voltage by
coupling them to a voltage supply driven to a selected preferred voltage.

19. A method for writing a video frame row by row in a liquid crystal display (LCD) having a matrix of liquid crystal pixels arranged in a plurality of columns and a plurality of rows, wherein each column has an associated capacitor and each pixel has an associated capacitor, said method comprising the step of coupling the column capacitors together prior to writing each row, so that the voltage stored on the column capacitors is equalized to an average value prior to writing each row.

20. A method for writing a video frame row by row in a liquid crystal display (LCD) having a matrix of liquid crystal pixels arranged in a plurality of columns and a plurality of rows, wherein each column has an associated capacitor and each pixel has an associated capacitor, said method comprising the step of charging a column capacitor to a desired video voltage while charging a successive column capacitor to a fixed voltage during the writing of each row.

15 21. A method for writing a video frame in a liquid crystal display (LCD) according to claim 20, wherein the step is performed by charging two or more successive column capacitors to a fixed voltage while charging the column capacitor to the desired video voltage.

20 22. A method for writing a video frame in a liquid crystal display (LCD) according to claim 20, wherein after the successive column capacitor is charged to the fixed voltage it is charged to a desired video voltage and at the same time the next successive column capacitor is charged to the fixed voltage.

23. A method for writing a video frame in a liquid crystal display (LCD) according to claim 20, wherein the sequence of charging one column capacitor to a desired video voltage while the successive column capacitor is being charged to a fixed voltage is repeated until all of the pixels in a given row have been written, and said 5 sequence is again repeated for each successive row until all of the rows in the matrix have been written.

24. A method for writing a video frame in a liquid crystal display (LCD) according to claim 20, wherein the column capacitor is charged to the fixed voltage by 10 coupling it to an analog voltage driven to a selected preferred voltage under the command of a logic circuit.

25. A method for writing a video frame in a liquid crystal display (LCD) according to claim 20, wherein the column capacitor is charged to the fixed voltage by 15 coupling it to a voltage supply driven to a selected preferred voltage.